UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, California 94105

December 14, 2016

Laura Duchnak, Director
Base Realignment and Closure Program Management Office
U.S. Department of Navy
33000 Nixie Way
San Diego CA 92147

Dear Ms. Duchnak:

We write to provide our recommendations on actions the Navy should take to rebuild confidence in the cleanup process at the Hunters Point Naval Shipyard Superfund site, San Francisco, California, as questions have been raised about the radiological cleanup work by Tetra Tech EC, Inc. As you know, under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the site's Federal Facility Agreement establishes the Navy as the lead agency on cleaning up Hunters Point, with the EPA and the State of California in oversight roles. Ultimately, we need to demonstrate that "all remedial action necessary to protect human health and the environment … has been taken before the date of [any] transfer" of property, as required by Section 120(h)(3) of CERCLA. Therefore, the Navy's technical review needs to be comprehensive and holistic to scientifically address protectiveness questions.

In addition, proactive and transparent community involvement will be key to address public confidence in the scientific review and its conclusions. The Navy's latest *Community Involvement Plan* affirms that it "is committed to keeping the community engaged in the environmental cleanup program" at the site and states: "Public involvement in the cleanup process results in a better outcome and a more robust cleanup." EPA strongly supports these principles.

We appreciate you moving forward with the Navy efforts to hire a third party independent contractor to review radiological work conducted by Tetra Tech EC, Inc., at the Shipyard. I understand that this scientific review will determine what aspects of that work require additional assessment, such as extra sampling. The additional assessment will begin after regulatory approval of the work plan. As you requested, EPA is providing recommendations for the scope of work for the technical evaluation and community involvement. As we have discussed, we want to create an efficient and technically sound process to enable a thorough and timely resolution of outstanding issues identified. Below and attached are key elements of EPA recommendations to date.

Technical evaluation recommendations include the following:

- Review records for the entire history of Tetra Tech EC, Inc., radiological work at the Shipyard basewide, including areas already transferred. Re-sample in priority areas of uncertainty, especially in areas of greatest concern based on health risk.
- Where allegations have been made regarding specific locations on the site, research site records and, where potential health risk is uncertain, sampling and/or scanning should be conducted in those areas.
- Evaluate inconsistencies in prior data in soil and buildings
- Estimate potential health risks to the public from prior misrepresentation of radiological data.

Community involvement recommendations include the following:

- Conduct targeted outreach to key stakeholders that reaches full breadth of community organizations and stakeholder groups.
- Develop routine site update materials to keep community members and key stakeholders informed, and maintain web presence accessible by lay audience from the public.
- Ensure community members have technical capacity to engage with agency representatives on technical issues pertaining to the cleanup.

The attached summary of technical recommendations includes highlights that are appropriate for public disclosure. Under separate cover we will send you the full recommendations that include the enforcement confidential aspects of the scope of evaluation. As circumstances evolve and more information is shared with us, more recommendations may be forthcoming.

I have asked my staff to commit to make ourselves available for regular coordination calls during the evaluation process. These can help ensure mutual understanding of the evaluation and decisions along the way so that our review will be well-informed and focused. We look forward to working with the Navy, California State Department of Toxic Substances Control (DTSC), and other state agencies to ensure protectiveness, transparency, accountability, and substantive public involvement. Please contact me at 415-972-3843 or manzanilla.enrique@epa.gov if you would like to discuss these issues further.

Sincerely,

Enrique Manzanilla
Director, Superfund Division

cc. Mayor Edwin Lee, City and County of San Francisco
Supervisor Malia Cohen, City and County of San Francisco
Tiffany Bohee, San Francisco Office of Community Infrastructure and Investment
Barbara Garcia, San Francisco Department of Public Health
Mohsen Nazemi, State of California Department of Toxic Substances Control
Grant Cope, State of California Environmental Protection Agency

Attachment 1

Summary of USEPA Comments on Technical Evaluation of Tetra Tech EC, Inc., concerns

The Navy has hired a third party consultant to draft a technical memorandum that will propose a workplan for future Navy work needed to address concerns regarding the integrity of Tetra Tech's radiological cleanup work at the Hunters Point Naval Shipyard. EPA has provided the Navy with a detailed write-up of our comments on the proposed list of topics to be addressed by the workplan under development. Addressing the recommendations below and any other issues that may emerge will be important steps to address the credibility of the cleanup. In addition, documenting all areas of inquiry will help us organize the team's analysis, ensure transparency, and ensure public confidence. These areas of inquiry should include (1) anomalous findings in statistical analysis and decisions about next steps on those and (2) regulatory agency recommendations and resolution. Below is a summary of USEPA recommendations. We have also discussed these with our regulatory partner the State of California Department of Toxic Substances Control (DTSC).

1. **Sample basewide, especially in areas of highest potential risk** – Review records for the entire history of Tetra Tech EC, Inc., radiological work at the Shipyard basewide, including areas already transferred. Some records show Tetra Tech EC, Inc., collecting radiological samples as early at 1990, including 1999 Cesium 137 samples significantly above release criteria and removal work before 2006 at a radium dial disposal area and metal debris reef. Due to the uncertainty about locations of potential Tetra Tech misrepresentation, EPA supports sampling at any base-wide that present a concern to assess the credibility of all of Tetra Tech's work on radiological issues. EPA recommends using a health-risk based approach to prioritize areas of concern based on factors that should include, but not be limited to, historical records of activities, current or future exposure based on land uses, sampling results already collected, and combination of highest risk radionuclides. EPA recommends new, independent soil sampling to help clarify the actual human health and environmental risk.

2. **Sample in specific locations of allegations** - Where allegations have been made regarding specific locations on the site, soil samples should be collected and analyzed in those areas. Collect at least ten samples in each of the specific locations. Discuss the work plan with regulatory agencies before proceeding. Inform regulatory agencies of the date and time for resampling so that regulatory staff may conduct site visits to observe and potentially collect split or duplicate samples for independent analysis.

3. **Analyze inconsistencies** - Evaluate all of the sampling data provided by Tetra Tech on radiological issues to assess whether the data are internally consistent. For example, EPA found in the NIRIS database that in Parcel B-2, Parcel G, and other areas, Tetra Tech reported in at least 2006, 2007, and 2008 some areas where concentrations of Lead (Pb) 214 are shown to be higher than Radium (Ra) 226. In some cases, reported concentrations of Bismuth (Bi) 214 are also higher than Ra-226. Because Pb-214 and Bi-214 are decay products of Ra-226, this result would not be expected. Evaluate this inconsistency as well as similar potential inconsistencies in other decay chains. Consider the potential need for new sampling to clarify health risk.

4. **Evaluate Building Scans** – Due to uncertainties regarding previous work done at buildings, e.g. scan speeds faster than workplan specified, address known exceedances of release criteria in Buildings 271 and 406 and the potential for unknown exceedances elsewhere. Review uncertainties about prior scans already performed and perform additional scans where uncertainties cannot be otherwise resolved.

5. **Estimate potential health risks** - To evaluate the potential harm resulting from any and all of the allegations made regarding Tetra Tech's work, discuss and estimate the potential health risk to current and future residents, the public, and construction or other workers that could result from the allegations. Please use the current version of the EPA's Preliminary Remediation Goal (PRG) Calculator to estimate the potential health risk from Tetra Tech EC, Inc., failures to follow workplans. EPA is available to provide technical support regarding the use of the PRG Calculator.

More details regarding specific allegations and EPA's recommendations to evaluate the impacts of those allegations have been provided to the Navy's staff under separate cover. These comments include recommendations aimed at ensuring that public health and the environment are protected and that the public can have confidence in the final assessment. They also include enforcement confidential information.

Finally, we have come to understand that the number of individuals who work on radiological clean-ups and are licensed as radiological technicians is relatively small in the United States, and many of these individuals have long-standing personal and professional relationships with one another. To ensure the credibility and independence of the work of the Navy's review team, it is important that staff and managers involved in this effort do not include former employees of Tetra Tech EC, Inc., (or close relatives of those employees) who could have been involved with previous work at the Hunters Point Naval Shipyard.

Attachment 2

Summary of Community Involvement Recommendations to the Navy from the US EPA Hunters Point Naval Shipyard Tetra Tech EC, Inc., Concerns

The overall objective of the following recommendations is to maximize public confidence in the Tetra Tech investigation process by establishing a consistent flow and transparent exchange of information with the public as the Navy's workplan unfolds. Consistently throughout the process, not just at project milestones, the community is expected to be "brought along" for input and participation with regulators as investigatory processes are established and decisions are made.

EPA appreciates your commitment to develop a "Radiological Community Engagement Communication Plan" for this process. The following elements should be incorporated into that plan, which should be flexible in scope to adjust to dynamic communication needs. We have also discussed these with our regulatory partner the State of California Department of Toxic Substances Control (DTSC).

Recommendation #1: **Ensure community members have technical capacity to engage with agency representatives on technical issues pertaining to the cleanup.**

- A third-party technical advisor should be made available to the community to explain and advise community members about ongoing and forthcoming work.

- The community should be allowed the opportunity to be part of the selection process for the technical advisor, and EPA can share past experiences implementing similar processes elsewhere.

Recommendation #2: **Establish routine community meetings (outside regularly planned community meetings), leverage pre-existing meetings, and provide additional forums for agency representatives to share information and for residents to speak with agency representatives and provide feedback.**

Meeting venues may include, but are not limited to, the following:

- Community meetings hosted by local groups listed in Appendix H of the 2014 *Community Involvement Plan* (CIP)

- The establishment of a HPNS Environmental Cleanup Center staffed for office hours allowing the public to speak with Navy representatives on the Tetra Tech investigation.

- The Mayor's Hunters Point Shipyard Citizen's Advisory Committee

- Routine public meetings co-hosted with DTSC and EPA with presentation and Q&A period.

Recommendation #3: **Develop routine site-update materials, maintain a web presence accessible for a lay audience, and provide "in-language" translations and interpretation services (for in-person meetings) as needed.**

As part of this recommendation, it is requested the following process and planning steps also be implemented to: (1) keep regulatory agencies informed; and (2) aid in ensuring consistent messaging.

- Publication material slated for distribution is expected to be reviewed by participating agencies in advance of distribution. Enough review time should be given to participating agencies for the Navy to incorporate changes and recommendations made by participating agencies.

- Community presentations are expected to be reviewed and practiced with participating agencies in advance of delivery to the community. Enough review time should be given to participating agencies for the Navy to incorporate changes and recommendations made by participating agencies.

- A routine monthly communication schedule for development and dissemination of written material and presentations is expected to be developed to ensure efficient, strategic information-sharing.

Recommendation #4: **Conduct targeted outreach to key stakeholders that reaches full breadth of community organizations and stakeholder groups.**

To ensure consistency and clarity of messages, thorough information dissemination, and inclusive and comprehensive community participation, it is requested the Navy:

- Obtain a third-party risk communicator to develop messages with the team.

- Obtain a third-party public participation practitioner to operationalize messages around key items related to the cleanup and to reach the diverse residents that surround the Shipyard to encourage their involvement in the process.

- Obtain a community liaison from the Bayview/Hunter's Point neighborhood to gather community concerns and both identify and reach local stakeholder organizations

Accepting formal public comment on key documents (*e.g.*, milestone workplans) should also be factored into the Navy's workflow.

Further, as part of outreach, it is also expected that a "feedback loop" process is provided as soon as possible to community members to reflect how feedback from the public (during formal public comment period and other public forums) will be incorporated in the decision-making process.

Recommendation #5: **Develop a pro-active media communications strategy to be incorporated with, but separate from the community engagement facet of, the "Radiological Community Engagement Communication Plan."**

- Media Communication Strategy to be one facet of "Radiological Community Engagement Communication Plan," and will focus exclusively on consistent outreach to media organizations on project progress.

- Said Media Communications Strategy will be implemented concurrently with community engagement plan.

USEPA Region 9 evaluation of Hunters Point Naval Shipyard radiation cleanup standards
August 25, 2016

The Hunters Point Naval Shipyard (HPNS) is a former military base in San Francisco, California. It was used by the Navy as a naval submarine and ship repair facility from 1945 until 1974 and was also the site of the Naval Radiological Defense Laboratory from 1948 to 1969. In 1989, U.S. EPA placed the Shipyard on its National Priorities List, which is a list of federal Superfund sites in the United States.

The Navy is the lead agency responsible for the investigation and cleanup of HPNS. As part of the process, EPA and its state regulatory agency partners (the California Department of Public Health and the California Department of Toxic Substances Control) oversee and enforce Navy compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (commonly called the Superfund law) to ensure the cleanup at HPNS protects human health and the environment. The Navy and regulatory agencies work together to decide how to address the contamination. The Navy also gathers community input through a public process.

EPA uses the best available science to develop guidance for cleaning up sites, such as HPNS, that are contaminated with radioactive materials. EPA's goal for the HPNS cleanup is to ensure that the community is protected from exposure to radiation and that the site can be used for work, recreation, and residential purposes.

EPA assesses the health effects of radiation at a site by calculating the "excess cancer risk" posed by radioactive contamination. Excess cancer risk is the additional probability that a person exposed to contamination will develop cancer over a lifetime. Superfund regulations in the National Contingency Plan have defined the protective range of excess cancer risk as a probability that a person exposed to radioactive and chemical contaminants will have between an additional one in ten thousand and a one in a million chance of developing cancer (technically known as the 10^{-4} to 10^{-6} cancer risk range). When calculating this range, EPA uses assumptions about exposure that are much higher than most people's actual exposure. This means that EPA overestimates risk to most people to make sure that cleanups are sufficiently protective.

EPA reviews the Navy's cleanup report for each survey unit (small area of land or part of a building) of HPNS using the current version of the EPA risk model to make sure that radiation levels are within the protective 10^{-4} to 10^{-6} cancer risk range. This ensures that any land that is transferred to the City of San Francisco for new use meets appropriate levels for protectiveness with regard to radiation. To provide additional protection, the Navy is installing a protective cover over the whole site. The Navy is also developing a plan, which EPA will review, that ensures the Navy or City will maintain and inspect the cover indefinitely.

EPA's risk models have changed over time as radiation science continues to improve. EPA has incorporated the latest models into its review process to ensure the HPNS cleanup continues to be protective of human health and the environment. EPA has reviewed the Navy's past HPNS cleanup reports, applying the current EPA risk model, and found that the Navy's earlier work had achieved the cleanup level needed to protect human health and the environment.

University of California at Santa Cruz Presentation

On April 21, 2016, a small group of faculty and students from the University of California at Santa Cruz gave a presentation about the HPNS cleanup at an Environmental Justice Task Force Meeting held in the Bayview-Hunters Point neighborhood. The presentation had some inaccuracies and left out some relevant information, as noted below.

The presentation criticized EPA's reliance on 2006 cleanup standards.

- In fact, EPA uses the latest version of EPA's risk model to review each Navy radiation cleanup report for individual sections of the site as they are drafted. ("Latest version" refers to whichever version is current at the time that EPA reviews each report.)

The presentation suggested that the Navy should be using standards with exposure scenarios that reflected only one end of the range that EPA considers protective.

- In fact, the Navy and EPA assessments of cleanup needs are already based on scenario assumptions of exposure that are higher than would be realistic. In part, this is because the assumptions of exposure do not take into account the protective cover. In addition, EPA considers the protective range to refer to a probability that a person exposed to radioactive and chemical contaminants will have between one in ten thousand and one in a million greater chance of developing cancer. The presentation did not reflect this complete range. Finally, the Navy routinely cleans up radiation to levels within the protective range, even with the current version of worst case scenario assumptions.

The presentation criticized the fact that the Navy's documents reference several different cleanup requirements

- In fact, Navy cleanup documents showed requirements from multiple agencies that might apply to particular cleanups. The Navy must meet requirements specific to each of those agencies – including the most strict. Some of the standards that the Navy must meet may be less strict than EPA's, but the Navy still referenced them in the documents to show that by complying with stricter standards, they also meet other requirements. The final cleanup requirements were selected in several Records of Decision that were presented in a series of public meetings, allowed at least 30 days for public comment, and then finalized.

For any questions, about the Navy's cleanup, please contact Derek Robinson, Base Realignment and Closure Environmental Coordinator, at

For any questions about the USEPA's oversight role, please contact Lily Lee, Cleanup Project Manager, at 415-947-4187 or lee.lily@epa.gov.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

Parcel A of the Former Hunters Point Naval Shipyard ("Shipyard"):

The information below addresses questions about potential current exposure to radiation at Parcel A. Here is what EPA knows about the history and cleanup of Parcel A that led to the removal of this portion of the Shipyard property from the Superfund National Priorities List and to approve the Navy's transfer of Parcel A to the City of San Francisco:

- We have no reason to question any cleanup work performed on Parcel A. To date no allegations have been made regarding the integrity of any of the cleanup work conducted at Parcel A.

- Historically, the majority of Parcel A was used for residences and administrative offices, not industrial activities.

- The only radiological materials found at Parcel A were sandblast grit and firebricks. These have been removed. Former Buildings 322, 816, and 821 had potential for radiological contamination. The Navy scanned all three buildings and did not find radiological contamination above required cleanup levels. Buildings 322 and 816 were demolished and removed. Building 821 is located on Crisp Road, not in the developed portion of Parcel A. No other sources of radiological contamination were identified during the investigation or cleanup of Parcel A.

- In 2002, EPA conducted a radiological scanner van survey of Parcel A and navigable roads on other parts of the Shipyard. All of the anomalies detected during the scan were attributable to natural occurring sources at levels consistent with what would normally be found in the environment.

- Parcel A was removed from the Superfund National Priorities List in 1999 and was transferred in 2004. If it would be helpful, EPA can provide copies of the Finding of Suitability to Transfer and the de-listing decision.

The Navy is the lead agency responsible for the investigation and cleanup of the Shipyard and holds the Administrative Record for the site. EPA and its state regulatory agency partners oversee and enforce Navy compliance with Superfund requirements to ensure the cleanup at the Shipyard protects human health and the environment. For more information on the Shipyard investigation and cleanup, contact Derek Robinson, Navy Base Realignment and Closure (BRAC) Environmental Coordinator: 619-524-6026, derek.j.robinson1@navy.mil. If you would like to discuss EPA's oversight role, please contact Lily Lee at 415-947-4187 or lee.lily@epa.gov or contact Jackie Lane at 415-972-3236 or lane.jackie@epa.gov.

October 2, 2016

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

Parcel B Artist Studios (Buildings 104, 115, 116, 117, 125) and the City/County of San Francisco Police Department (Building 606) of the Hunters Point Naval Shipyard

This information addresses concerns about potential current exposure to radiation at the above locations on the Hunters Point Naval Shipyard site. Below is what EPA knows about the history and cleanup at these locations that led to our approval for the lease of these areas:

- To date, no specific allegations have been made regarding the integrity of the cleanup work conducted specifically in areas of the artist studios or Building 606 that give us any reason to question EPA's prior decision to approve the lease of these buildings.

- The current artist studios on Parcel B had formerly been used for barracks, schools, a cafeteria, and other non-industrial uses. Therefore, EPA has never had concerns about radiological impacts in these buildings. The Navy has removed sanitary sewer and storm drain lines near these buildings.

- Before Building 606 was constructed, Building 503 had been located in its place and had the potential for radiological impact. The Navy has removed sanitary sewer and storm drain lines and soil under and near Building 606. The Navy scanned soil from beneath Building 606 and found no elevated radiation levels.

- In 2002, EPA conducted a radiological scanner van survey of navigable roads on parts of the Shipyard including near the Artist Studios and Building 606. All of the anomalies detected during the scan were attributable to natural occurring sources at levels consistent with what would normally be found in the environment.

- EPA and other regulatory agencies found Buildings 104, 115, 116, 117, 125, and 606 suitable for lease in 2008. If it would be helpful, we can provide copies of the Finding of Suitability to Lease.

The Navy is the lead agency responsible for the investigation and cleanup of the Shipyard and holds the Administrative Record for the site. EPA and its state regulatory agency partners oversee and enforce Navy compliance with Superfund requirements to ensure the cleanup at the Shipyard protects human health and the environment. For more information on the Shipyard investigation and cleanup, contact Derek Robinson, Navy Base Realignment and Closure (BRAC) Environmental Coordinator: 619-524-6026, derek.j.robinson1@navy.mil. If you would like to discuss EPA's oversight role, please contact Lily Lee, EPA project manager at 415-947-4187 or lee.lily@epa.gov or Jackie Lane, EPA Community Involvement Coordinator at 415-972-3236 or lane.jackie@epa.gov.

October 12, 2016

September 13, 2016

Lawrence Lansdale, Environmental Director
Naval Facilities Engineering Command (NAVFAC)
Base Realignment and Closure (BRAC) Program Management Office West
Department of the Navy
33000 Nixie Way, Building 50
San Diego, CA 92147

Dear Mr. Lansdale:

Thank you for the meeting on July 14, 2016, at the Region 9 office of the U.S. Environmental Protection Agency (EPA) regarding Navy's cleanup of radioactive material at the Hunters Point Naval Shipyard (HPNS) in San Francisco, California. As we stated then, integrity of the data from the Navy's contractor Tetra Tech ECI, Incorporated, (Tetra Tech) is of the utmost importance in ensuring the cleanup decisions are made in a manner that protects public health and the environment and complies with requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

We understand that several agencies are currently engaged in ongoing investigations regarding the nature and extent of Tetra Tech's misrepresentation of data delivered to the Navy. I am confirming that we agreed in the July 14, 2016, discussion, that the Navy will not propose any further transfers of Navy property at HPNS without results of these investigations and/or any other Navy action necessary to clarify the actual potential public exposure to radioactive material at and near the HPNS.

If you have any questions or comments about the Hunters Point Naval Shipyard cleanup, please contact either of the undersigned if you would like to discuss this matter further.

Sincerely,

Angeles Herrera, Assistant Director
Federal Facilities Branch, Superfund Division
U.S. Environmental Protection Agency
Region IX
(415) 972-3144

Janet Naito, Branch Chief
Department of Toxic Substances Control
State of California
Cleanup Program – Berkeley Office
(510) 540-3833

Cc: Thomas Machiarella and Derek Robinson, Navy
Amy Brownell, City of San Francisco Department of Public Health
Alec Naugle and Tina Low, Regional Water Quality Control Board